REVIEW OF MR. DALRYMPLE'S PAPER ON LONG-WALL SYSTEM OF MINING.

BY A. HOWELLS.

I believe that the discussion and reviewing of papers read on any subject, will give more information, better ideas and more correct knowledge, than (as a rule) the paper itself will do—for the reason that the author of the paper (in most cases) gives the subject that coloring produced from his standpoint of the matter—while being reviewed and discussed by others—a different coloring and facts are produced, thus bringing the merits of the case before the society in different shapes, and with the experience of different members—

thus guarding against and correcting many errors, otherwise readers of papers would be led to. The fault of many authors that produce or reproduce articles on any given subject, is to be to emphatic in their claims and explanations,—without conditions or qualifications —and I was strongly impressed with this, when reading Mr. Dalrymple's paper on Long-wall mining, and believing (from my stand point) that his paper, in several instances, is misleading from the emphatic generality of its claims, causes me to make a short review of the same. I may also add right here that, no matter, how much any subject on mining is discussed or has been discussed, it is by no means exhausted. Much has been written on Long-wall system of mining, and although my experience has taught me but little of that method I nevertheless believe that I can point out where the said system is impractical and it would be the height of folly to adopt it.

Many men have made a failure as mine superintendents, when taken from one country to another country, or from one locality to another locality, by obstinately adhereing to the system of mining that they were conversant with and perhaps experts in that system. A case of this kind came under my observation very lately in this State. A person of undoubted standing and qualifications, came from one district to another district and for the very reason that his experience was confined to the mode of working mines in his native district, and his obstinacy in being determined that that was the only true method of mining, he proved an utter failure and the coal company were out forty thousand dollars—having gained much experienced—but lost their money. There is another mode of working mines, that I have heard but little said about, and a plan that was utilized in the primitive days of mining, which is called pannell system, and I think it is now practiced at Steubenville in this State, wherein the transportation of coal is mostly done by manual labor.

Now, I have no doubt but that mode of mining is suitable there, and may perhaps, be at other places where the coal is thin, and the conditions are such that it is not necessary to mine over 100 tons of coal per day; but for any one to say or advocate that, that is the best general plan for mining coal (in this age of the world) would in my opinion be just as correct to advocate that the horse tramway is superior to the locomotive railway. So it is in the Longwall system. I doubt not that under certain conditions, Longwall system is perhaps better and cheaper than other methods; but under mining conditions generally, it is more expensive; hence becomes impractical. Like the mining machine; under certain conditions it is prtctical, desirable and beneficial; under contrary conditions it is impractical and useless.

Mr. Dalrymple says that one mode of working Longwall is to drive the narrow work to the boundary line (or the extreme end of the basin) then to come back with all of it in one breast; this might do very well in certain seams of coal and probably is the best method of exhaustive mining, and it surely looks very well on paper; but when a person has not the least idea

where the end of the basin is, how does he know when to turn back? It might be said that the end is where the coal runs out; true in one sense, but not true in another sense, because very often the coal in the number one seam will run out, and in few feet or few yards of horseback the coal will again come in, in all its majesty and perhaps a larger amount of coal in the second basin than in the first; hence if under the said system of mining the first basin is all worked out, the operator may find that he has left considerable coal in the ground, and if by drilling he does not find enough coal to guarantee a new opening, what coal there is is left in the ground for ever and ever, and which loss would certainly exceed the gain that would accrue from the said mentioned system of mining; especially so, when it is considered that mines in the number one seam cost from $25,000 to $60,000 to get them into operation, also, if the above did not make the Longwall system impractical in mining the number one seam, or any other seam similarly situated. It ups and downs depressions and elevations often in some part of the mine 40 to 50 feet higher than in other parts of the mines, and sometimes the difference in the elevation being 65 feet and that occurring—not gradually—on an easy grade in half a mile or so, but abruptly in in from two to three hundred feet, the elevation and dip often being at an angle of 30 or more degrees, and such hills or more properly perhaps, underground mountains, in the shape of a sugar-loaf—also, if the above was not sufficient to make Longwall system of mining under certain conditions unprofitable, the great amount of water contained (as a rule) in the strata of rocks overlying many coals, would certainly make it unprofitable for the reason that when the first break in the rocks would occur (which would soon be the case by the Longwall system of mining) water would come in, and the said water would have to be discharged (pumped out) from the very beginning of mining coal. But to overcome this powerful and a very undesirable and surely the most costly element coal miners have to contend with, Mr. Dalrymple advises a sump to be excavated of such a size as to hold two or three day's water that the mine makes. Now if Mr. Dalrymple had put in this proviso—providing said mine did not make over one thousand gallons per day, the advise of excavating a sump, would not be misleading; but when a mine is making three hundred thousand gallons per day, which is a common occurrence in some seams of coal, (to say nothing of mines that are making two million gallons per day) how large a sump would it require to keep two or three day's water? I have not computed the number of cubic feet it would require, but I can safely say that such an excavation in many places would cost more than an ordinary coal basin would be worth, even if the miners would be so magnanimous as to dig the coal for nothing.

Mr. Dalrymple further says, that there are very few coal fields in Ohio but what can be worked by Longwall system. I am soory to have to differ so greatly with him, but in my judgment the case is the reverse, and that there are very few coal fields in this State in which

the system would be profitable. It, like the pannell and single entry and blind entry system, under certain conditions, can be made profitable, but they should be classed as the exceptions, and not the rule by any means. Now then what is the best method of mining? I answer, common sense. Nothiug like it to achieve success, in mining, as well as in all other avocations. Common sense to apply the best knowu system of mining, suitable to the seam of coal intended to be mined. whether that be Longwall, single entry, pannell or double entry system; but I think I can safely say for several generations to come in Ohio and elsewhere, where coal four feet and over is mined that the double entry system will take precedence of all other methods, and other systems will be rare exceptions.

Mr. Dalrymple also intimates that no coal is lost by the longwall system of mining, whereas by other methods (room and pillar) ⅓ is left in pillars and is never recovered. In another place he says that it is a very easy matter to mine coal by the Longwall system if one understands it, but to the inexperienced it is very difficult task. That strikes me as been true of all methods of mining. Without experience all is difficult; and if one-third of any seam of coal is left in pillars in any mine, especially that portion in the entry pillars, surely it is not the fault of the method of mining, but rather to the inexperience or something worse, of the mine boss. I claim with perfect assurance that in the great majority of the coal seams that are mined in Ohio to-day, that coal can be mined with less loss by the double entry and room and pillar system than by any other method, and where much coal is left in the mine and never recovered, it is through and by other causes that have nothing to do with the method. For instance, most of the mining plants, in this as well as other States, are owned by persons that know nothing of practical mining; they have invested their money, expecting in return a good revenue or interest. The superintendent is aware of this and to establish a reputation for economical producing of coal and to please the owners by showing a good profit at the end of the month, he will leave many things undone that should have been done, and if coal is some thiner than the standard and miners will not dig it unless at an extra price, or if from any other cause,(of which there are many in a coal mine that may be mentioned), miners will not dig at the regular price that coal is left, thinking it can be worked at some future time, but when the future time comes, the superintendent may have left to save his reputation—as it were—and a new one has taken his place and when he comes to work this coal that is left, he finds it costs much more to do so than it would in the first place; at the end of the month the pay roll, (or rather the profits) are very unsatisfactory to the owners. The boss notices this and he, like his predecessor, will want to save his reputation, will then go at it and work out the cheapest way he can, takes a pillar here, pillar there, wherever he can do so without extra expense; in a short time cave-ins will take place and the mine be ruined and played out, leaving thousands of tons of

coal in the mines that could have been mined at a fair profit, if done so at the proper time; but the method of mining had nothing to do with leaving that coal in the ground. It the owner of the mine was a practical miner such a loss would not have occurred. I don't blame the superintendent, he is forced to this in nine times out of every ten, by the cry for large gains from the owner of these mines, and I venture to say that there is no boss of standing but that prefers to take charge of a mine whose owner understands mining, than to bossing a mine when the owner does not understand mining. I also venture to say that the loss of coal by the room and pillar system (if properly managed) is as small as by any other system; but when improperly managed no matter what the system, the loss will be great.